

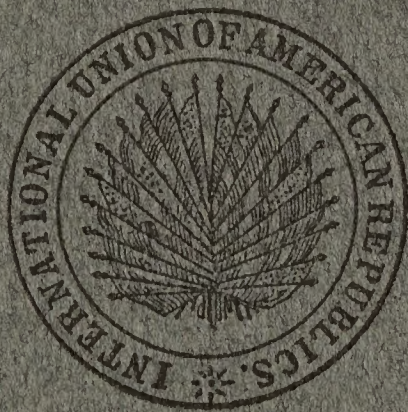
INTERNATIONAL BUREAU OF AMERICAN REPUBLICS

JOHN BARRETT, DIRECTOR

FRANCISCO J. YANES, SECRETARY

TOBACCO

(Reprint of an article from the Monthly Bulletin of the International
Bureau of American Republics, January, 1909)



WASHINGTON, D. C.
GOVERNMENT PRINTING OFFICE

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TOBACCO :: THE AMERICAN INDIAN'S GIFT TO CIVILIZATION



THE tobacco crop in 1907 amounted almost to three billion pounds. Allowing as a moderate average 25 cigars and 100 cigarettes to the pound, this gives an annual product of 25,000,000,000 cigars, 100,000,000,000 cigarettes for the world's consumption during the year, with plenty to spare for all the snuff, chewing, and pipe tobacco demanded by such users of the weed. Assuming that the total population of the world is 1,600,000,000, the per capita employment of tobacco can be reasonably calculated.

The discovery by Europeans of the native disposition of this indigenous plant was cotemporary with the discovery of America. COLUMBUS, it is asserted, noticed the Indians drawing in smoke from a kind of pipe and exhaling it through their nostrils. All reports from explorers and adventurers, whether in the southern or northern regions of the new continents, contain references to the habits the Indians had of consuming this unknown herb in one way or another. Smoking seems to have been most general, but among some tribes it was chewed, by others it was considered a sacred drug with which to produce purging and emesis, by others again it served as a stimulant or narcotic. All Indians, however, agreed that tobacco added greatly to their physical and spiritual well being. The Spanish, the Portuguese, and the English were not slow to adopt the habit in vogue wherever they found it, and it was soon introduced into Europe. Sir WALTER RALEIGH popularized pipe smoking in England by the method principally employed in the regions visited by his countrymen. The Portuguese had already begun the cultivation of the plant in southern Europe, and from them it was brought in 1560 to France by NICOT, who studied its properties in a scientific way. From NICOT is derived the word nicotin, the essential alkaloid which characterizes tobacco wherever grown. Claims have been made that the Chinese, ages before the discovery of America, had the habit of smoking, but that they used tobacco can not be proved, although it is not improbable that some similar leaf was known to them. STANLEY, in his expedition across the center of darkest Africa, found the natives following with a like custom, but they used the banana or a

similar leaf in their pipes, and tobacco was not found where the connection with the white man could not be traced.

Romance and poetry were associated with tobacco perhaps even more in its earlier years than to-day. Some of RALEIGH's best interviews with Queen ELIZABETH were on this subject; BEN JONSON wrote verses, as did all the other poets of his time, except SHAKESPEARE, clubs were founded solely to enjoy it, and a man's rating in society was established by tobacco. When King JAMES's famous



THE TOBACCO PLANT CROWNED BY ITS FLOWER AND BLOSSOMS.

On the right the flower has been removed, but the suckers are developing. Both flower and suckers must be removed to prevent the plant from going to seed, as well as to stimulate the growth of the leaf, which is the important consideration in tobacco culture.

"Counterblast Against Tobacco" was issued, "drinking" tobacco, as smoking was then often called, was almost universal not only in England but in Europe. One of the most famous epigrams of the time ran thus:

Sir Walter Raleigh! name of worth,
How sweet for thee to know
King James, who never smoked on earth,
Is smoking down below.

In the New World the romantic side of it was coupled with a very practical influence in populating the Virginia colonies. The whole region of the James had given itself over to the cultivation of tobacco, so that even the streets of the towns were devoted to it, and many young men went out as settlers and led rather lonely lives. These young men had plenty of tobacco, but no money or sweethearts with which to grace a home. The London Company, then most busily engaged in the trade between England and Virginia, devised a plan by which a cargo of young women of good social position was sent out to comfort the young men; there was to be, of course, no coercion of any kind, but each young man on his selection of and acceptance by one of the



ARRANGEMENT AND CONSTRUCTION OF TOBACCO FLOWERS.

The structure gives evidence that tobacco flowers are naturally self-fertile.

young women was to pay to the company "120 lb. waight of best leafe tobacco," for reimbursement. The first cargo was such a success that others followed, and no complaint was heard that the bargain was regretted in any direction.

A plant that could fasten such a habit upon mankind, whether civilized or uncivilized, within the short space of four hundred years, and become known as well as cultivated in every portion of the earth, must meet an essential but mysterious want of the human body and mind. The origin of the word is, however, lost in obscurity. Undoubtedly it was derived from the islands or mainland of the Tropics,



TOPPING AND CUTTING.

Topping and cutting are the methods adopted in all tobacco fields to encourage the growth of larger leaves, to prevent the development of seed, and to keep the plant in the best possible condition. Men and boys pass between the rows of plants removing the "suckers" at the top or cutting away the imperfect leaves from any other place on the stalk.



CULTIVATING TOBACCO UNDER CANVAS.

In growing the best qualities tobacco, it is found that more uniform results are obtained by protecting the young plants under canvas, as thereby all conditions are practically under complete control.

and is purely an Indian name. In all languages except the English the first vowel is *a*, but the *o* is popular and will always be retained by those using the English language. The difference would seem insignificant, but one who is not aware of it may at times be confused by searching through various classifications under the wrong letter.

With the increasing use of tobacco in all its preparations, the culture of the plant has been established over wider and wider areas, until now there is practically no country—civilized or uncivilized—where it is not to some extent grown. Indigenous as it is to a tropical climate, the tobacco plant has, by the ingenuity of man, been compelled to adapt itself to all ranges of temperature, so that it is found at such wide extremes as the region of the equator and the snow-covered valleys of Canada and Sweden. In this respect it resembles the vine, which will thrive so long as it has sunshine for a few months in summer, and sufficient moisture to nourish the rapidly growing leaves.

Tobacco belongs to the nightshade—*Solanaceæ*—family, which embraces many of the best known domesticated plants and vegetables, such as the Irish potato, the tomato, eggplant, red pepper, jimson weed, and henbane. The genus *Nicotiana* has about 50 species, but the great varieties, the *Nicotiana tabacum* and the *Nicotiana rustica*, supply nearly all the tobacco of commerce. There is a variety called *persica*, but the Persian tobacco as we know it is but a modification of the *rustica*. The species *Nicotiana tabacum* is more generally used than the others in every part of the world. It grows from 2 to 8 feet in height, and has ovate, oblong or lanceolate leaves, alternately attached to the stalk spirally; these leaves measure from 12 to 42 inches in length and 8 to 24 inches in width. The flowers are rose-colored or white. In the first days of the use of tobacco each brand was known more by the place of growth or origin than by any other name, but to-day, although such well-established and even historical, distributive titles as Virginia, Maryland, Carolina tobacco, etc., are retained, many older terms like Trinidad, or Brazil, have been quite forgotten. A better-understood designation is that of the character or appearance of the article ready for consumption or preparation by the trade. All varieties are distinguished from one another by the form, color, size, and texture of their leaves; by their fragrance, adaptability to soils and uses, and by varying aptitudes to secrete gums and oily matter while ripening.

Tobacco is grown from the seeds and its cultivation does not differ materially from that of the cabbage. The preparation of seed for distribution to planters is an important part of the industry, because much depends upon the quality of seed used, and the appropriateness of such seed for the particular soil and climate in which it is proposed

to grow it. Tobacco seeds are small, and plenty of them are needed to insure a good growth. Moreover, they react noticeably to influences of soil, producing a leaf that preserves a color traceable to



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A TOBACCO FIELD

The tobacco field must be constantly watched from the day of sowing the seed or setting out the young plants to the moment the leaf is carried into the curing house. The flowers and suckers must be removed and the animal enemies of all kinds must be killed in some way. Sometimes the cost of this eternal vigilance is a heavy item and the profits to the planter may be seriously reduced by his efforts to bring to the manufacturer a high grade, uninjured leaf.

the coloring matter of the soil in which it grows. The plant is one also that crosses readily, so that it may be easily modified to suit local conditions, but at the same time it must be carefully guarded to pre-

vent accidental crossing. The cultivation of tobacco for its various uses has received as careful attention as that of any agricultural industry, and the Agricultural Departments of all governments have given elaborate study to the question, as a scientific and practical problem vitally concerning all farmers and producers of staple crops. Each year the plant must be reared from the beginning, thus resembling wheat and potatoes, and differing therefore from trees or the



THE TOBACCO WORM.

This is called horn worm or horn blower in different parts of the country and is the caterpillar of a large sphinx moth. It eats the leaf of tobacco, tomato, and allied plants, including occasionally the Irish potato. The worm is green. One, two, or even more crops of worms may develop in a season. The long beak is really a tongue sheath through which the worm sucks the nectar of flowers. Several methods of destroying this enemy are known and practiced.

vine. Cultivation in every detail has become a nicely technical procedure, every step being carefully controlled; after seeding, and, if this is adopted, after transplanting, tobacco must be fertilized, and there is no plant so susceptible to fertilization as tobacco. The demand of any particular variety of plant for its natural nourishment must be most exactly met, or poor results are apt to follow. Consequently the chemistry of plant, soil, and fertilizer has become almost

an exact science. More than half the States of the United States are engaged in the production of the leaf, and throughout the Union new areas are brought into bearing, because analysis has shown that soil, seed, and food can be so combined as to produce a commercially profitable article. Agriculture experiment stations the world over are showing how to go to work to get a good crop, and the old fear, ending in real disaster in Virginia many years ago, that the soil would become exhausted and barren, is no longer impending over the modern farmer who studies his occupation intelligently. Perique tobacco, produced in a small area of Louisiana, settled originally by



TOBACCO BED SHOWING AWNING FRAME.

A seed bed in which the tobacco plant is cultivated before it is transplanted. This method is adopted for delicate leaf grown from the seed and develops the resistant quality in the mature plant.

the Acadians, is an exception, in that it will not grow elsewhere. It demands the black soil of these bottoms for its peculiar flavor. Scarcely more than 50,000 pounds a year of Perique measure the world's crop.

Various expressions are used to denote the processes employed in the different stages of cultivation. Topping is the term implying the removal of the seed head; this is done to divert the vitality of the plant from its essentially physiologic function—the perpetuation of the species—to the development of the leaf. Suckers are thrown out at the place of topping, and these, too, must be removed

promptly. This applies as well to the method by which the strength of the leaves is maintained by restricting their number. If seeds are to be gathered certain plants must be set apart from others and these cultivated with special reference to this purpose. When the leaf is ripe it is harvested. The length of time between topping and harvesting varies greatly, and experience is needed to decide on the proper color and firmness at which to begin. Cutting or priming is the term by which is understood the process of gathering the leaves for curing. This is one of the most important steps in the cultivation of tobacco. It must be done on a dry day, so that the leaf will be clean, unspotted, and free from fungus. According to the habit of the country or district the leaves are now placed in a basket or hung on a board or wire, and allowed to wilt. Then it is cured. Curing is, of course, the step which changes the product from a mere agricultural to a purely commercial commodity. Tobacco must not be permitted to sweat, which really means the growth of fungus, for if fungus once starts in a warehouse, it is liable to spread throughout all the stock; neither must it ferment too soon, for the result will be the same, or lead to evils equally as disastrous. Proper fermentation is an art and must be controlled by an expert whose personal judgment has been tested by long handling of tobacco in all stages. The technical process is called pressing, but does not necessarily imply that the leaves themselves are subjected to great pressure; they are weighted down by themselves in a receptacle constructed for that purpose, the change taking place now, due to action of enzymes rather than to bacteria (as was once thought), being one of ripening, as it were, through heat and moisture.

This fermentation process develops in the tobacco leaves the characteristic qualities of the commercial article. Fermentation follows immediately after curing when both are done by the grower, but where the cured tobacco is bought up by manufacturers several months may pass before it is subjected to the latter process. When tobacco is ready for manufacture into its finished condition for consumption, the amount of nicotin is relatively unimportant, and it is certain that the excellence of the leaf and its adaptability are not dependent upon it. If the prime object of tobacco culture were the production of nicotin, as the prime object of raising sugar beets is the production of sugar, then the amount of nicotin might be forced by the use of nitrogenous fertilizers, but nicotin alone no more makes a good tobacco than does alcohol alone make a good wine. The flavor and aroma are much more important.

Classification of the leaves now takes place, although some selection has taken place in the earlier stages. A division popularized by long use separates them according to their color into: Claro, light

brown; Colorado claro, brownish yellow; Colorado, brown; Colorado maduro, dark brown; Maduro, dark. This has applied largely to the wrappers, but Sumatra and other leaves are to-day more freely employed for wrappers, and as fashion now admits that a good cigar is something besides a wrapper, and that a good wrapper may possess other qualities than color, adherence is not always given to the above



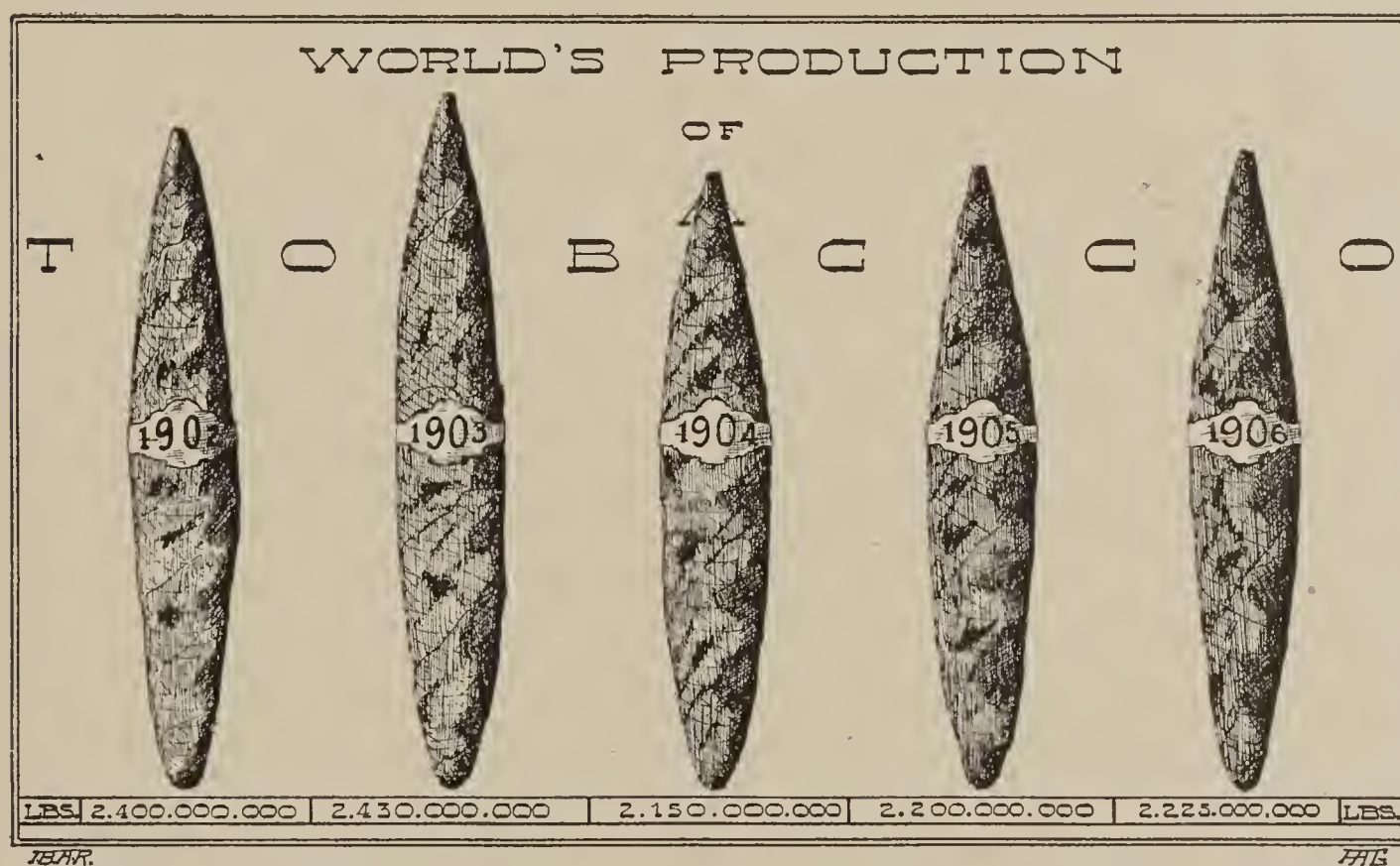
A BUNDLE OF ASSORTED TOBACCO LEAVES.

Tobacco leaves of uniform size and grade are carefully assorted by themselves and then tied in a bundle for ease of handling.

classification. This whole question is one decided ultimately by the manufacturer and the consumer, the latter exercising his taste, the former his judgment. Taste takes the direction of strength, aroma, moisture or dryness, and appearance of the finished article, whether cigar or cigarette; judgment is necessary on the part of the manufacturer in deciding not only these points, but also the questions of

quality, and serviceability for filler, binder, and wrapper; both taste and judgment unite in demanding that a tobacco when used for smoking purposes must have a good burn. Burning quality is the most important requirement for a first-class smoking tobacco.

Variation in burning qualities must be sought in differences in chemical composition, which, as has been said, is greatly influenced by the character of the soil, the climate, the season, and the kind of fertilizer used. Moreover, there is reason to believe that certain strains of tobacco possess the power of appropriating from the soil those constituents conducive to a good burn, while other closely related types under the same conditions are lacking this power. In addition to the growing of tobacco, the curing and fermentation of the leaf are important factors in developing a good burn. This is a comprehensive term, including such elements as fire-holding capacity,



evenness of burn, and character of the ash. The fire-holding capacity refers to the length of time the tobacco will keep alight; but it should burn evenly, and have no great tendency to coal in advance of the burning area. In some cases defects are due to injudicious combinations of filler, binder, and wrapper. In the best smoking tobacco the ash should be a uniform gray or white, and show a decided cohesiveness. Good tobacco will not burn with a flame, but will continue to glow almost indefinitely when once it is lighted. The "burn," the deciding factor in tobaccos, has had an immense amount of chemical study devoted to it for more than fifty years, but as yet no one has been able to offer a satisfactory explanation of the conduct of different kinds of tobacco as regards their burning qualities. One fact is noticeable, however, in comparing the composition of the tobacco plant with

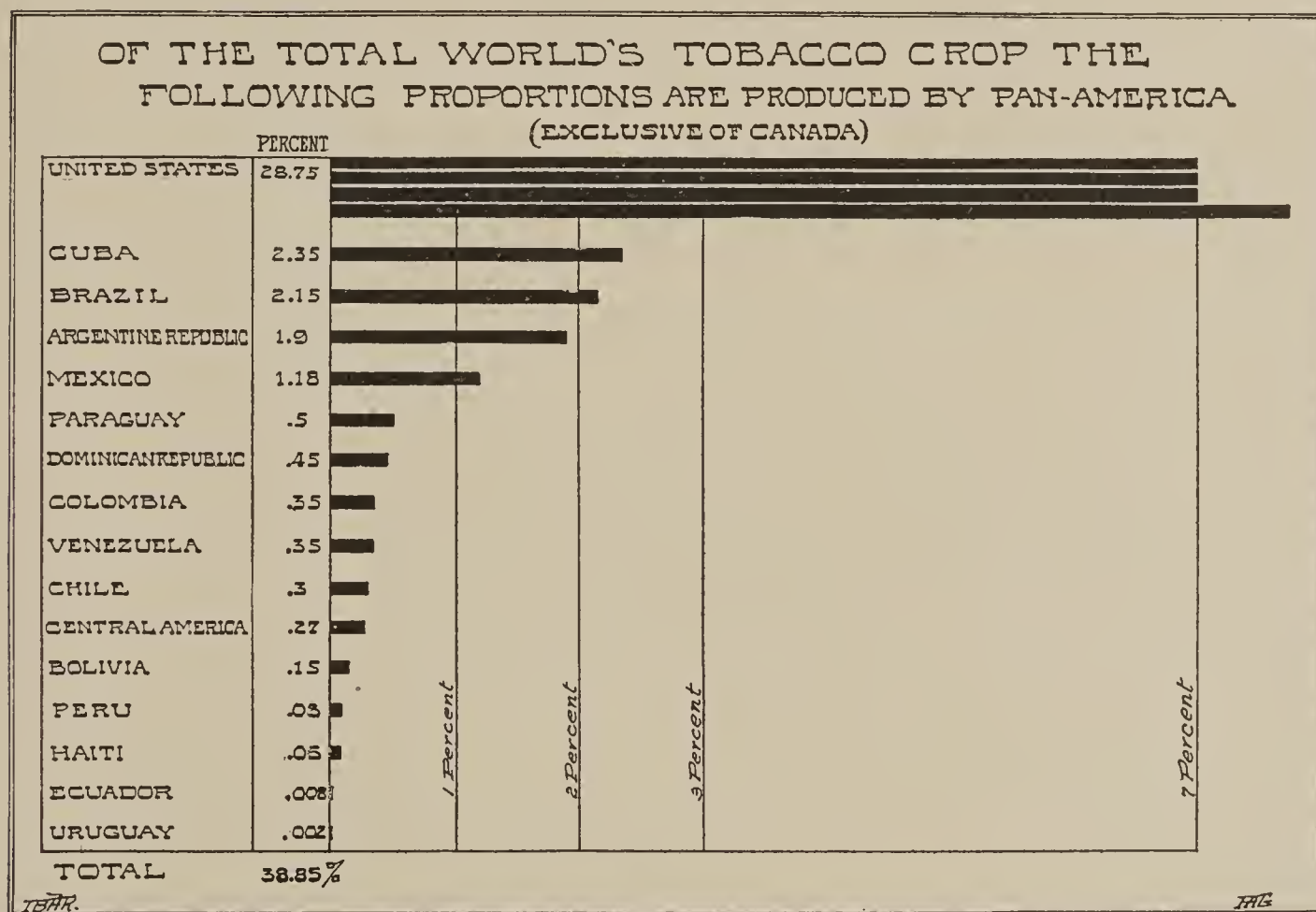


DRYING TOBACCO.

When the tobacco leaf is ripe it is picked and sorted into bundles of the same length and then hung up on a pole or wire to wilt and dry. This may take place in the open air, especially where the sun, as in the Tropics, is hot enough for the purpose.

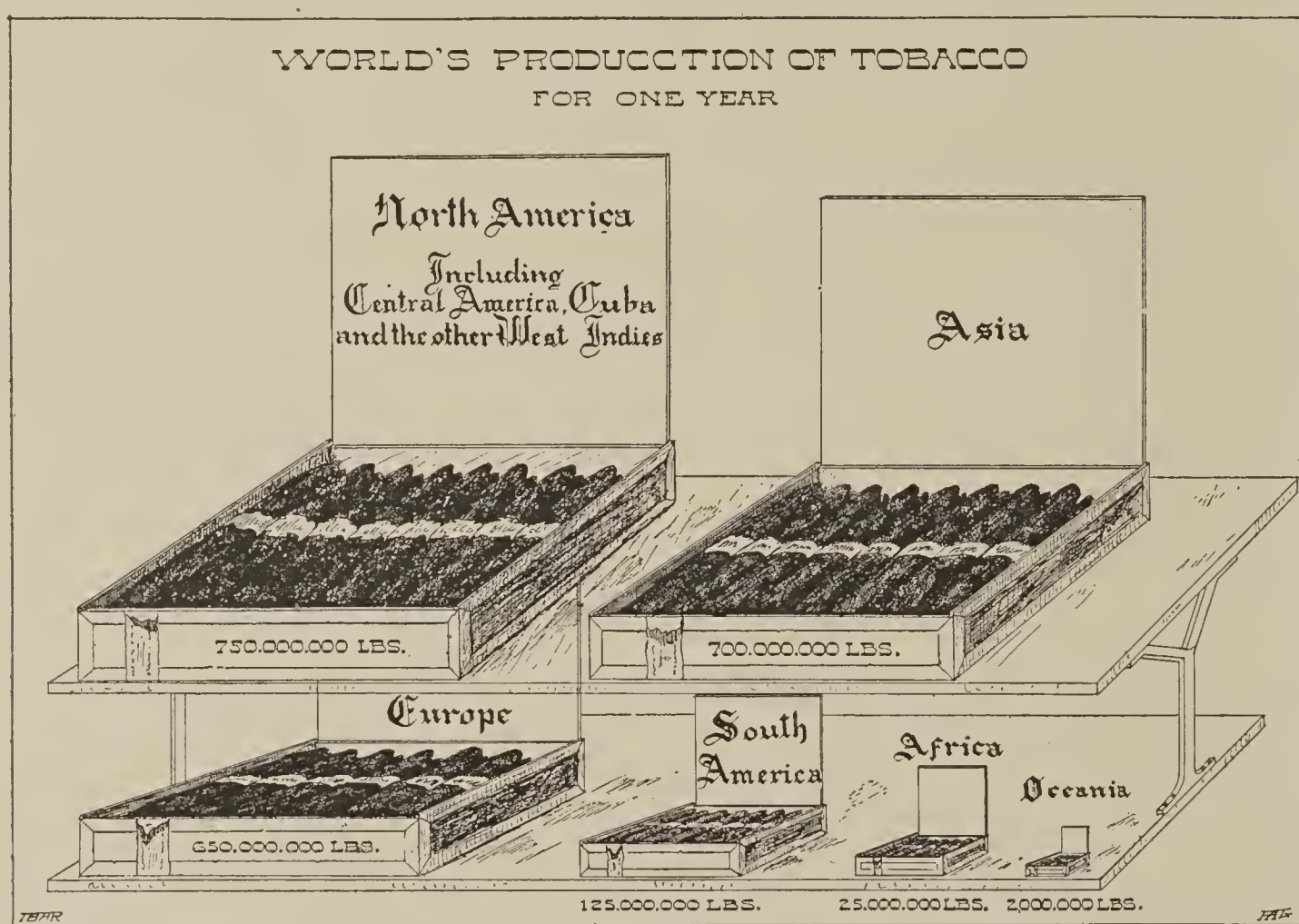
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that of other agricultural crops; it has a remarkably high content of mineral matter, commonly called the ash. On the average this ash is well above 15 per cent of the total weight of the dry leaf, and a distinct relation is demonstrable between the mineral constituents of the ash and its good or poor burning qualities. Two undisputed facts have resulted from innumerable studies made in this regard, and these are that chlorin injures the fire-holding capacity of the leaf, while potash favors this property; these facts, however, are insufficient in themselves to explain fully the burning qualities of different samples of tobacco. Yet the ultimate analysis indicates that potash salts, in due combination with calcium and magnesium, produce the best ash and give that desired burn which characterizes the highest priced leaf in the tobacco trade.



When the leaf has been delivered to the manufacturer it is converted into cigars, cigarettes, pipe, chewing and smoking tobacco. Smoking and chewing were the aboriginal methods by which native Americans consoled and stimulated, or at times physicked themselves with the plant. A crude pipe from which smoke was drawn up into the nostrils was the implement first seen by the Spaniards. On the mainland, especially in what is now the United States, a pipe on present day lines was used, and had great symbolic significance at councils of peace or war. Within the Tropics—in Mexico and Central America—the dried leaf was rolled upon itself to form the prototype of the modern cigar, and in other places corn husks were the containers, somewhat larger than the shuck cigarette smoked

so commonly by Mexicans, Central Americans, and Brazilians. The pipe was the vehicle adopted by the English, and all the old prints illustrating smoking in early days show only the pipe in the mouths or hands of the devotees of tobacco. Chewing is undoubtedly a habit inherited from the time when the medicinal effect was considered of immense value in the use of tobacco, for its stimulant qualities were held by the Indians to follow a small dose, or to be a desired result of the immediate prostration produced by a larger quantity. As Europeans found that effects were thus obtained, tobacco in some preparation for mastication was popularized for use by those who could not get a pipe or cigar whenever it was desired. Snuff taking was discovered among the Brazilian Indians, and they were



its best fabricators. Their taste in this matter was as pure as that of the fashionable world of the East, and the snuff they made has never been surpassed nor their apparatus for making it. This habit was introduced into Europe by the Portuguese, and popularized in France and the north by CATHERINE DE MEDICI. Ladies took snuff, and probably ladies occasionally smoked, but practically no mention is made of women smoking, and as a general habit women seem to have resorted to it very sparingly. The ungallant rumor current among many that the ladies of Latin America quite as commonly as the men are seen with cigar or cigarette between their lips is unfounded and unwarranted. Women of the peon class are met with pipe or cigarette as a companion; in the public places of the



A CURING HOUSE.

After the tobacco leaves are picked they are transported into the barn or curing house. This building is to-day constructed on modern principles, and is intended to offer the most advantageous arrangement for pressing and fermenting the leaf ready for the manufacturer.

haut ton, as in similar resorts of the Anglo-Saxon, it may be the fashion for ladies to join in the trick of smoking, but the more acquainted one becomes with the intimate social life of Latin America, the more is one astonished that credence could ever have been given to the fiction that women here habitually indulged in tobacco.

The physiologic effects of tobacco have been discussed ever since it was first used by civilized man. The Indians knew the symptoms it caused, but were satisfied to ascribe them to the mysterious power influencing all life about them and questioned no further. But the attacks upon the habitual consumption of the prepared leaf have



TOBACCO CURING HOUSE.

Within the curing house several processes are carried on before the tobacco is ready for the manufacturer. The leaves are resorted now to grade them as to quality, and they must be delicately handled to prevent any injury that might reduce the grade to which any leaf originally belonged. Only hand labor can be used for this purpose and decided skill is required.

had practically no restraining force, and there is no gauge of civilization so generally applicable throughout the world as that of the consumption of tobacco. A substantial agreement has to-day been reached among scientists that tobacco—this does not mean the alkaloid nicotin—is not the poison it was once supposed to be. In fact, tobacco leaf can be grown and cured with an almost imperceptible proportion of nicotin, and this meets the requirements of the consumers' taste even better than a tobacco strong in nicotin. It is therefore the aroma in the smoke, and the essential oils in the leaf, which perpetuate the habit and stimulate the intellectual desire



INTERIOR OF A CURING HOUSE.

The removal from the barn takes place only when the tobacco has passed through the various processes of curing. It is now ready for the manufacturer, who may treat it as he pleases, but as a rule is satisfied to turn it into a product for consumption directly from the classification prepared by the grower or leaf tobacco dealer.

to enjoy the narcotic effects resulting from the properly prepared article. Raw tobaccos are strong, but they are not liked; on the other hand, delicately cured tobaccos bring the highest price and enjoy the longest reputation. This indicates that the effect sought is altogether on the mind and imagination and not at all upon the body. The use of tobacco is therefore differentiated at once from the habitual use of any other drug. It has no demonstrable—that is, no organic effect upon the body. It does irritate the heart and upset the digestive organs if taken too often or without judgment, but this effect is altogether functional and disappears as soon as the habit is discontinued. That form of blindness called tobacco



A READER IN A CIGAR FACTORY IN CUBA.

Every large cigar factory employs a professional reader, who reads from books or newspapers selected by the workers, to hold their attention on the work and prevent conversation or argument between the operatives. He sits on a raised platform above the heads of his hearers, centrally located in the room, where all may hear him.

amblyopia comes from the almost constant use of the cigar or from the roughest kinds of tobacco smoked in a pipe. The consequences here may be permanent and disastrous, but immediate attention to the early symptoms will restore the eyesight unimpaired. Tobacco seems not to weaken the moral fiber of the one who uses it, and there is need only of a firm effort of will to relinquish the habit, if the individual so desires; in these respects it is essentially superior to all other drugs. Another argument in its favor is that the narcotic or stimulant effect of tobacco seems to be satisfied within itself; other drugs arouse a craving from a still more violent excitant, but the probability is that if mankind were deprived of tobacco his

physique would suffer by indulgence in other drugs infinitely more powerful and pernicious.



(Photo by Underwood & Underwood.)

A CIGARETTE FACTORY.

Cigarettes are to-day made largely by machinery, which has to a great extent displaced the hand labor, once the universal rule in factories. Machines are even made to place the cigarettes in the box ready for the consumer, but the employment of women for this purpose is still customary in the older centers of the trade. This is altogether piecework, and women become marvelously expert in their occupation.

The tobacco plant, like all living things, has its parasites, but it has no enemies peculiar to itself; it suffers, therefore, only from

attacks by insects that could thrive on other plants equally well. From the time the seed is sown until the leaf reaches the consumer there is danger from some enemy. The flea bug or flea beetle, the tobacco worm or hornblower, the bud worm, and a host more, feed on the growing leaf. Other insects like the cigarette beetle are injurious to cured tobacco, and feed on all preparations made from it; they hatch in factories and warehouses. For all these there are fortunately successful remedies, destructive to the insects but not harmful to the tobacco.

Every Republic represented in the International Union of American Republics is a grower of tobacco. Every country has a large commerce in the leaf and the manufactured article; every Government draws an important part of its revenue from the tobacco trade going on within or across its borders. Tobacco is used by a greater number of people and among more nations than any other cultivated product of the earth, and it is, with the exception of tea, the most highly taxed substance in the world. In 1907 the United States derived \$78,000,000 from the internal-revenue and customs receipts on this article, and other Governments profit likewise. The inhabitants of every country have their own fashion of smoking and of preparing the leaf for consumption. Machine labor is displacing hand labor, and therefore the varying shapes of cigars or cigarettes once characteristic of any country are gradually yielding to a more uniform product, but the tobacco itself is growing superior year by year and the smoker may rest content that wherever he goes he will find an excellent tobacco from the local fields.



